

## What exactly is...

### Filament, filament yarn

Filament is an endlessly spun and wound manmade fiber. Filament yarn comprises as many filaments as the spinneret has holes.

### POY = Pre-oriented yarn

Pre-oriented yarn: the spun yarn is not completely drawn. It is used in textiles, e.g. after being finished using Barmag draw-texturing machines.

### FDY = Fully-drawn yarn

Fully-drawn yarn: following quenching, this yarn is fully drawn and wound between so-called godets.

### DTY = Draw-textured yarn:

Texturing is the process in which POY is durably crimped. This increases the elasticity and the heat retention. At the same time, it reduces the heat conductivity.

### Industrial yarns

Particularly tear-resistant and low-shrinkage fully-drawn filaments used for automotive tires, belts and airbags.

### Titer

Measurement for determining the thickness of filaments and filament yarns, e.g. dtex.

### dtex

The dtex measurement unit provides information regarding how many grams 10,000 meters of a filament or a yarn must be.

### Godet

Godets are fast-rotating, cantilevered bearing, cold or heated rollers over which manmade fibers are guided. They are normally used to draw the yarn at various speeds.

## Surprising information about manmade fibers

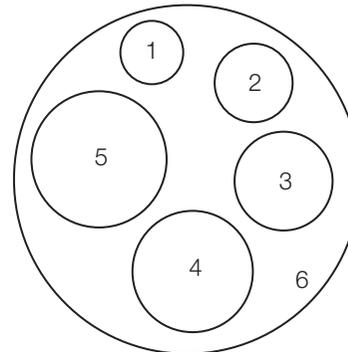
### Once around the equator

A modern WINGS winding machine winds up to 32 filaments at the same time. A filament of this kind might be a 40-den polyester yarn wound to create 8 kg packages. The winder requires 6 hours for this, having taken up a total of  $32 \times 1,800 \text{ km} = 57,600 \text{ km}$  of yarn. If the yarn is unwound again and the individual filaments knotted together, it would be able to span the entire equator.

### How thick is a human hair...

Filament thicknesses of the hair of an average Central European:

- 1 FDY microfilament (fine titer)
- 2 Silk worm thread
- 3 Cotton fiber
- 4 POY (medium titer)
- 5 Wool
- 6 Human hair



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## R&D center: spinning system and texturing

Trial and error – customer-oriented research and development requires production-oriented machines.

## R&D center

The spinning system R&D center is split into highly-adjustable modules that permit various layouts for the trial machines.

The dried granulate is fed from the top level of the module into the extruder on the next-lower level. Then, the granulate is processed into melt. From the extruder, the melt is then conveyed via the melt pipe to the spinning head, in which it is forced through the small openings in the spinneret by spinning pumps. This is where the still liquid, endless “filaments”, are created, which – depending on the number of nozzles of up to 32 filaments per winding position – are bound together.

The filaments are cooled on the “quenching” level. On the winding level, the lowest level of the module, the filaments are – if required – drawn across godets and wound using a winder.

## Spinning systems

### **POY**

Pre-oriented yarns (POY) are the starting material for a wide range of fashion, sports, functional and home textiles. Following production, POY yarns are textured and – with around 40 percent – make up the lion’s share of the global production of manmade fiber yarns.

Our core competence is systems designed for the production of high-quality standard or specialty yarns. Regardless of whether polyester or polyamide, micro-fiber or super-microfiber – Oerlikon Barmag’s POY WINGS technology will give impetus to our customers success.

### **FDY**

Fully-drawn yarns (FDY) are used to manufacture textile fabrics without the need for further finishing. Wherever textiles are to hang smoothly or glide fully-drawn yarns are used. Once again, Oerlikon Barmag is the technology leader here. The WINGS concept – transferred to the FDY process – has removed the limitations of conventional FDY spinning systems. WINGS provides optimized production processes, low waste rates and an around 30-percent reduction in energy consumption.

### **Industrial Yarn**

Automobile tires, safety belts, airbags, geotextiles, mooring ropes for drilling platforms, conveyor belts, sails and fishing nets – all these are manufactured using industrial yarns. Even this small selection of applications showcases the diversity of what is possible in the most exciting area within the textile sector.

## Texturing machines

The eFKA unites proven technologies from the eFK, the AFK and the MPS series with the flexibility of a state-of-the-art modular machine structure. Here, the top priority is – as customary – excellent yarn quality.

In an economic, efficient and energy-conscious manner, the eAFK utilizes godet technology, auto-doffing and – for excellent package build – ATT technology. Various innovative cross-sections offer the perfect solution for customized requirements. As does the huge range of processible polymers – from polyester, polyamide and polypropylene all the way through to PLA and PTT.